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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,113	08/01/2003	Maki Ito	Q76707	3482
23373	7590	01/24/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			MRUK, GEOFFREY S	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/632,113

Applicant(s)

ITO, MAKI

Examiner

Geoffrey Mruk

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 16 August 2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 3 is objected to because of the following informalities:

- Claim 3 states “the width y of the pressure generating chamber at the vibration plate side is defined by outer peripheries at both sides of a space portion in its width direction”. Since a “space portion” is not a structure, but rather an absence of a structure, it is recommended that the width be defined in terms of the structure of the pressure chamber.
- The term “its” is improper claim language, as it is unclear to what element is being identified.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimada (EP 0 963 846 A2).

With respect to claims 1 and 2, Shimada teaches a liquid-jet head comprising:

a passage-forming substrate (Fig. 2B, element 10) on which pressure generating chambers (Fig. 2B, element 12) communicating with nozzle orifices (Fig. 2B, element 11) are defined, and a piezoelectric element (Fig. 2B, element 300) composed of a lower electrode (Fig. 2B, element 60), a piezoelectric layer (Fig. 2B, element 70), and an upper electrode (Fig. 2B, element 80), which are provided on the passage-forming substrate while interposing a vibration plate (Fig. 2B, element 50) there between. Column 4, lines 21-27 states the width of the piezoelectric layer is the same as the width of the pressure generating chamber. Therefore,  $x/y=1$ .

With respect to claim 3, Shimada discloses the width  $y$  of the pressure generating chamber (Fig. 12, element 12) at the vibration plate (Fig. 12, element 55) side is defined by outer peripheries at both sides of a space portion (Fig. 12, element 350) in its width direction, the space being provided at a periphery of an opening of the pressure generating chamber at the vibration plate side (Column 22, lines 1-20).

With respect to claim 4, Shimada discloses the pressure generating chambers are formed in a single crystal silicon substrate by anisotropic etching (Column 13, lines 54-58), and each layer of the piezoelectric element is formed by deposition and a lithography method (Claim 54). With respect to claim 4, the limitations are directed to the method of manufacturing the liquid-jet head and do not patentably limit the liquid-jet head structure. However, Shimada discloses the methods of forming pressure generating chambers by anisotropic etching and formation of each layer of the piezoelectric element by deposition and a lithography method.

With respect to claim 5, Shimada discloses a liquid-jet head (Fig. 1) according to any one of claims 1 to 4.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mukoyama (JP404257446A) teaches of an analogous structure such that the width of the piezoelectric crystal element (Fig. 3, element 30a) to that of the pressure chamber (Fig. 3, element 20a) is within a range of 0.8 to 1.0 so that the ink drops are efficiently spouted.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
1/5/2005

GM

*Michael S. Bunk*  
Primary Examiner  
AU 2853